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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,327	09/08/2003	Yoshihide Yasuda	33-003	9197

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EXAMINER	
PAK, SUNG H	

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 04/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/656,327	YASUDA ET AL.	
	Examiner	Art Unit	
	Sung H. Pak	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-14 is/are rejected.

7)☒ Claim(s) 10 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 08 September 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 0903.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

Information disclosure statement filed 9/8/2003 has been considered by the examiner.

Claim Objections

Claim 10 is objected to because of the following informalities: line 4 of claim 10 recites optical fibers which are arranged "perpendicular to each other". However, the specification as well as the drawings teach optical fibers that are arranged ***parallel*** to each other at predetermined intervals (See for example, Fig. 2 of the instant application). Therefore, the claim should be amended to recite optical fibers which are arranged "parallel to each other". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kikuchi et al (US 2002/0097956 A1).

Kikuchi discloses an optical device with all the limitations set forth in the claims, including: an optical fiber array (Fig. 1A, 1B); wherein the optical fiber array has at least one optical fiber ('108' Fig. 1A); wherein the optical fiber array has plurality of fibers at

predetermined intervals (Fig. 1B) and a capillary which supports the optical fibers ('102' Fig. 1A, 1B); wherein the optical fiber array includes an outgoing end surface ('112' Fig. 1A), and wherein the optical fiber includes a central axis of the optical fiber (Fig. 1A); a lens array, wherein the lens array has at least one microlens ('106' Fig. 1A), each microlens corresponding to one of the plurality of optical fibers (paragraph 0026), wherein the lens array includes an incoming end surface ('114' Fig. 1A) which faces the outgoing end surface of the optical fiber array, and an outgoing end surface ('116' Fig. 1A) which sends out a light that is transmitted through the microlens, and wherein the microlens has an optical axis (Fig. 1A); wherein the outgoing end surface of the optical fiber array is formed to be inclined with respect to the central axis of the optical fiber (Fig. 1A); wherein the incoming end surface of the lens array is formed to be inclined with respect to the optical axis of the microlens (Fig. 1A); and wherein the relative position of the optical fiber array and the lens array is adjusted such that an inclination angle of the outgoing light sent out from the outgoing end surface of the lens array with respect to the optical axis of the microlens becomes an optimal angle (paragraph 0025-0027);

wherein three surfaces, which include the outgoing end surface of the optical fiber array, the incoming end surface of the lens array and the outgoing end surface of the lens array are inclined with respect to the central axis of the optical fiber (Fig. 3); and wherein the relative position of the optical fiber array and the lens array is adjusted such that the outgoing light becomes parallel with the central axis of the optical fiber (Fig. 3);

wherein the outgoing end surface of the optical fiber array and the incoming end surface of the lens array are arranged to be inclined with respect to the central axis of the optical fiber (Fig. 1A, Fig. 3); by an angle that is equivalent to the optimal angle (paragraph 0027),

wherein the incoming end surface of the lens array is arranged to face the outgoing end surface of the optical fiber array in parallel (Fig. 1A, Fig. 3), wherein the three surfaces are inclined with respect to the central axis of the optical fiber (Fig. 3), and wherein the outgoing light is made parallel with the central axis of the optical fiber by shifting the lens array in parallel with the outgoing end surface of the optical fiber array (Fig. 3);

wherein the lens array includes a transparent lens substrate (paragraph 0026), wherein the lens substrate has a first end surface and a second end surface, which are on opposite sides of the lens substrate (Fig. 1A, Fig. 3), wherein the microlens is located on the first end surface (Fig. 1A, Fig. 3), and wherein the second end surface forms the incoming end surface of the lens array (Fig. 1A, Fig. 3);

wherein the outgoing end surface of the optical fiber array and the outgoing end surface of the lens array are inclined with respect to the central axis of the optical fiber by different angles (Fig. 6), wherein the incoming end surface of the lens array is arranged perpendicular to the optical axis of the microlens (Fig. 6), and wherein the three surfaces are inclined with respect to the central axis of the optical fiber by placing the incoming end surface of the lens array at a predetermined angle with respect to the outgoing end surface of the optical fiber array (Fig. 6);

wherein the lens array includes a transparent lens substrate (Fig. 6), wherein the microlens is located on a first end surface of the lens substrate (Fig. 6), and wherein the first end surface of the lens substrate serves as the incoming end surface of the lens array (Fig. 6);

wherein the outgoing end surface of the optical fiber array and the incoming end surface of the lens array are inclined by the same angle (Fig. 2), wherein the outgoing end surface of the

lens array is arranged perpendicular to the optical axis (Fig. 2), wherein the incoming end surface of the lens array faces the outgoing end surface of the optical fiber array in parallel (Fig. 2), and wherein the inclination angle of the outgoing light with respect to the optical axis of the microlens is maintained at the optimal angle by shifting the lens array in parallel with the outgoing end surface of the optical fiber array (Fig. 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi et al (US 2002/0097956 A1) in view of Yasuda et al (US 2003/0152325).

The applied reference (Yasuda) has at least one common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Kikuchi discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not explicitly teach an angle compensating member as claimed in claim 8.

Yasuda, on the other hand, explicitly teaches the use of angle compensating member (Fig. 4 and Fig. 5). Such angle compensating member is advantageous and desirable over the prior art because it allows for precise and accurate control over the output direction of the output optical

signal, which can in turn maximize output coupling. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Kikuchi device to have angle compensating member of Yasuda.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi et al (US 2002/0097956 A1).

Kikuchi discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not explicitly teach the inclination angle of output light with respect to the outgoing end surface of the microlens being substantially –0.84 degrees.

However, it is commonly known in the art to adjust the positional relationship of optical components such that optical signal is outputted at an optimal output angle. Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)). See also MPEP 2144.05.

It would have been considered advantageous and desirable to make the inclination angle (with respect to the outgoing end surface of the microlens) of the output light of Kikuchi to be –0.84 degree, since it would ensure the output light beam to be parallel to the optical axis of the device and allow for precise and efficient out-coupling of the transmitted optical signal.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Kikuchi device to have the inclination angle of output light with respect to the outgoing end surface of the microlens to be substantially –0.84 degrees.

Conclusion

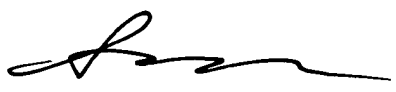
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US006862383B2, US 20040047557A1, US006483961B1, US006625350B2, US 20020131701A1, US006010251A , US 20030228100A1, and US 20040008967A1 disclose fiber arrays coupled with lens arrays.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The examiner can normally be reached on Monday- Friday, 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571)272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sung H. Pak
Examiner
Art Unit 2874



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